Chicago, Milwaukee, St. Paul
and Pacific RR Roundhouse
Deer Lodge Vicinity
Powell county
Montana

HAER No. MT-5

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, D.C. 20240

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HISTORIC AMERICAN ENGINEERING RECORD

MT-5

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC RR

DEER LODGE ROUNDHOUSE

Date: 1908

Location: Deer Lodge, Powell County, MT

Owned by: Chicago, Milwaukee, St. Paul and Pacific RR

Designed by: Unknown

Significance: The roundhouse at Deer Lodge is part of one of the largest and earliest electrification projects in the United States as well as being the ~~the~~ largest wooden structure of its type remaining in the United States.

Transmitted by: Dan Clement, 1983.

In lieu of an historical report we have included a letter from Field Curry, a consulting engineer and long standing member of the Society of Industrial Archeology. The letter includes a highly detailed description of the photographs (excluded are MT-5-5 and MT-5-15) taken by Jack Boucher in October of 1974. The Historic American Engineering Record gratefully acknowleges the work of Mr. Curry.

Field Curry, P.E.
Consulting Electrical Engineer
305 Garland Street
Pittsburgh, Pennsylvania 15218

7 February 1977

Ms. Beverly N. Baynes
Historic American Engineering Record
National Park Service
Washington, DC 20560

Dear Ms. Baynes:

It is indeed fortunate that Jack took the photos of the Milwaukee's Deer Lodge roundhouse whe he did as when I visited the site last fall, every trace of the electrification except the poles had disappeared. The last electric train ran on 15 June 1974 and dismantling began immediately.

In the electrified zone there are roundhouses at Harlowton, and Deer Lodge in Montana, Avery, Idaho, and Othello and Tacoma, Washington. Those at Harlowton, Avery and Othello are quite small as only servicing and minor maintenance took place at these locations. Light and heavy repair work for the 440-mile Rocky Mountain and Missoula Divisions was done at Deer Lodge and for the 220-mile Coast Division, at Tacoma. Today all are essentially abandoned as all work is concentrated at main shops in Milwaukee, Wisc.

The roundhouse is located on the southwest edge of town and the open part faces due west as the RR runs north-south through town. Regretably, Jack took only the roundhouse and one of the power plant. There is an enormous backshop just south of roundhouse, and a combined division office, depot, and crew facility building at the north end of the yard and a rare example of a RR boarding house east of that on the town's main street, all 1908. Could Jack be trained to call in for advice when he comes across something like this?

I have numbered each photo on the back side of Jack's label and put them into order.

MT-5-1: This is one of 20 locomotives built at the Erie Works of the General Electric Co. starting in 1946 for the U.S.S.R. As the Cold War escalated, it became apparent that they would not go to Russia but GE completed the order anyway. When I drove by their plant in 1948 they had a yard full of locomotives. Three were sold to the Chicago, South Shore and South Bend RR and presumably are still in service, the Milwaukee took 12 and the remaining five went to the Paulista RR, in Brazil. This is the only one of the 12 saved and was given to the town of Deer Lodge and now stands on the grounds of the Powell Co. Courthouse, about $\frac{1}{2}$ mile away, unfortunately with its interior gutted and minus motors and gearing. At the time of construction, they were the ~~largest~~

most powerful ever built in this country, 5110 hp continuous, 5530 hp for one hour, weigh 273 tons, are 88'-10" over coupler faces.and had a 2-D-D-2 wheel arrangement. They were known as Class EF-4 and carried road numbers E70-E79 with two more, numbered E20 and E21, having steam heating boilers installed so they could be used in passenger service. They quickly became known as "Little Joes" and served to extend the life of the electrification by at least 20 years. The multiplicity of hoses permitted coupling two units together and operating them as one locomotive (multiple unit control) and this also permitted coupling to a diesel-electric locomotive. A common locomotive consist in recent years was "two Joes and a Jeep" (Jeep from GP, meaning general purpose locomotive, the description of the unit to the left). The electrics handled the train when they could; on grades, the diesel was cut in to help, eliminating the need for a rear end helper and the cost of a second engine crew.

The photo also shows the detail of the bracket arm construction used throughout this largely single track RR. This being a secondary track, there is only one 4/0 grooved bronze contact wire suspended from a ½" stranded steel cable. On main tracks, there were two contact wires, alternately suspended, to insure sparkless current collection at high speeds. Next to the insulator supporting the messenger and barely visible are some small wires which form a horn gap, a crude but inexpensive form of lightning protection. Every insulator along the main line has such horn gaps across it. To the right of the photo can be seen the span wire construction used when there are multiple tracks. The box cars are in a four-track repair facility, "rip tracks" the main tracks are just beyond and the yard proper is to the right (south).

MT-5-2. View looking east. It is a 24-stall roundhouse though obvicusly not all stalls are usable.

MT-5-3. The train in the foreground is the wreck train or part of it. The car at the right has prefabricated panels of track, the next car, blocking timber and what appear to be couplers and the car at left has old tracks and wheels to replace those damaged in a derailment. It's a pity Jack did take some of the rest of the train as there would have been the "big hook" a large locomotive crane, typically 200 tons, bunk cars, kitchen and dining car, tool cars, etc. The water tower at the left is in the compound of the Montana State Prison. No. 1 stall is at the left. Stalls 3-9 represent the shop area; the high bay gives headroom for an overhead crane. Stall 10 is used as a storeroom. The small car at the right carries resistors and is used to load the generator of a diesel-electric locomotive. The traction motors are disconnected and the resistor bank connected instead.

MT-5-4. The vehicle to the left of the turntable is the "shop goat" used to move locomotives that cannot move under their own power, and moving material around the roundhouse/shop area. Note that the catenary stops short of the turntable (at the pole with the

white base at the left) and that none of the stalls have a trolley. This is for safety reasons--if it isn't there it can't kill you.

MT-5-6. The odd looking steel box outside and above stall 9 is the chimney for the blacksmith forge just inside.

MT-5-7. The most probable explanation for the new door on stall 2 is that someone tried to go in or out with the door closed, an all too common occurence, but not as serious as the many occasions when a locomotive didn't stop short of the turntable pit when the turntable was lined for another track.

MT-5-8. This is the lead, or "pony," truck belonging to the earliest, 1915-1916 locomotives. Since it is marked bad order and all but one of the locomotives has been scrapped, one wonders why it is there.

MT-5-9. The umbilicals leading from the top of the "A"-frame bring power for lighting and to operate the turntable. The center one brings 3000 V dc and is connected to the cable strung out along the right side of the turntable. This is called a "stinger" and is used to get power to a locomotive so it can move on and off the table under its own power but with no trolley overhead.

MT-5-10. Pits are found in all roundhouses serving electric and diesel-electric locomotives since much of the work is concerned with the traction motors and gearing. They are never found in roundhouses dealing with steam locomotives.

MT-5-11. This is indeed a historic locomotive and I'm sure it is no accident that it has been saved. Originally numbered 10200A and 10200B, it was the first to arrive on the property, in November 1915, after a public relations tour of all the major Milwaukee cities. It carried a banner proclaiming it as the "largest electric locomotive in the world," an easily defensible claim since nothing that had been built up to then even came close. Forty two two-unit locomotives were built, 30 geared for freight service and 12 for passenger, the latter re-geared for freight service when newer passenger locomotives were purchased in 1919-20. They were rated at 3440 hp continuous and 4100 hp, one hour, wheel arrangement 2-B/B/B/B-2. Around 1940 a number of units had their cabs removed and pony trucks removed and were spliced into other units to make three- and four-unit locomotives. Other than this pair, only one other unit was saved, E57B, originally 10211B, which is on display at Harlowton, but again gutted and without traction motors and gearing.

MT-5-12. These are all relatively new diesel-electrics but it is somewhat unusual to see them equipped with snowplows. The brake pipe hose, which is the central one, has had to be lengthened to accommodate long-travel draft gear. The small hoses on either side are for multiple-unit operation.

MT-5-13. This is from stall 21 looking north.

MT-5-14. This is the shop area, looking north from stall 9. The machinery shows the effect of OSHA but the shop is closed and all the machinists transferred or laid off.

MT-5-16. Back doors of stalls 19 and 20 which lead to the backshop. It is not quite clear what the hose and pipe are for but probably to get a temporary air supply to the shop. It was gone in September 1976.

MT-5-17. The ladders shown in this and other photos are not temporary but permanent parts of the building; they are for fire fighting. It would be extremely costly to sprinkler a building like this, and it was built before the advent of dry-pipe systems in any event, (wet-pipe systems would be likely to freeze) so the solution was to ring the building with hydrants, seen in the lower left corner, a safe distance from the building, but close enough that hoses could be laid where needed.

MT-5-18. Stalls 23 and 24 are longer than the others, no doubt to accommodate the four-unit locomotives or to store two smaller ones as this appears to be all of original construction.

MT-5-19. Jack has written 1909 on the back of the photo but the date is clearly 1908. The RR did reach here in 1908, beyond in fact. Only the tunnel through St. Paul Pass in the Bitterroots kept the RR from being open to the Coast and it was opened in 1909.

MT-5-20. This is labeled NE end but I think it the SW end. The VHF yard radio antenna is at the top of the pole.

MT-5-21. This is the west side of the boiler house. The pipes are steam lines leading to the roundhouse on the left and the back shop on the right. This is also the center for electrical distribution for the entire yard and the south side of the building is a veritable rats nest of wiring. The boilers appear to have been recently replaced.

Any questions?

Yours very truly,